

Claims

1. Method for making a joint between an initially closed tubular member and a hollow component, the tubular member and the component being joined together by means of the action of a fluidic high internal pressure with formation of an overlapping joint area, characterized in that, by means of the high internal pressure on the walls (12, 13) of the tubular section (2) and component (3), undercut surfaces (11) are shaped such that at least one common indentation forming the form lock is made on the walls (12, 13) of the tubular member and of the component (3), and that by the high internal pressure the tubular member (2) is widened in the joint area (15) in a cross-sectional shape departing from a circular shape.

2. Method according to claim 1, characterized in that the component (3) is likewise configured as a tubular section and before the formation of the form lock for positioning on the tubular member (2) it is assembled with the tubular section (2) to be joined.

3. Method according to claim 1, characterized in that the component (3) is configured as an initially open tubular section, the tubular section surrounding a hollow space over at least 180°, and that the component (3) prior to the formation of the form lock is turned up elastically at the edges of the opening before the formation of the form lock for positioning on the tubular section (2) and is placed on the tubular section (2) with a springing back of the edges of the opening.

4. Method according to any one of claims 1 to 3, characterized in that the tubular section (2) and the component (3) are expanded together in the joining position and their walls (12, 13) are pressed truly to shape against a bead (8) which is formed on a high internal pressure forming tool (4) surrounding the two parts together, and reaches into its cavity (5).

5. Method according to any one of claims 1 to 3, characterized in that the tubular section (3) is first cross-sectionally narrowed, preferably mechanically by means of a punch, and then is placed in an high internal pressure forming tool (4), its cavity (5) following the shape of the component (3) at least at the place of the cross-sectional

narrowing (9), and that then the tubular section(2) is pressed by means of high internal pressure conformingly against the inside (14) of the component (3).

6. Method according to either of claims 2 or 3, characterized in that the tubular section (1) assembled loosely with the component (3) is expanded by means of high internal pressure with formation of a press fit between component (3) and tubular section (2), and that then the walls (12, 13) of the tubular section (2) and of the component (3) lying frictionally against one another are, by the cooperation of at least one punch (16) arranged in the high internal pressure forming tool (4), forced with the high internal pressure to form the indentation locally or circumferentially.

7. Method according to any one of claims 1 to 6, characterized in that a nipple (10) is shaped from the tubular section (2) by means of high internal pressure, and is joined to the component (3).

8. Method according to claim 7, characterized in that the component (3) provided with a cross-sectional narrowing (9) is placed fixedly into a branch (6) of the high internal pressure forming tool (4), [which is] of equal shape at the place of the narrowing (9) with the component (3) in the inserted position, and that the tubular section (2) is expanded by the high internal pressure into the branch (6) and the component (3) is expanded into it, the undercut surfaces (11) of the cross-sectional narrowing (9) of the component (3) being caught from behind by the nipple (10) that is forming.

9. Method according to any one of claims 1 to 8, characterized in that, before the formation of the indentation in the joint area (15), an adhesive is placed between the tubular member (2) and the component (3), and that, after the formation of the indentation, the adhesive ability of the adhesive is activated preferably by heat treatment..

10. Method according to any one of claims 1 to 8, characterized in that, before the formation of the indentation of component (3) and tubular section (2) , in the junction area (15) at least one of the walls is coated with solder and that after the formation of the double-walled indentation the component (3) and the tubular component (2) are soldered together by heat treatment of the solder.

11. Method according to any one of claims 1 to 8, characterized in that, before the formation of the indentation, a damping material is placed between the tubular section (2) and the component (3).